

Appl. No. 10/755,458
Response to Office Action dated March 6, 2006
000073874/0029/721669-1

Amendments to the Claims

1. (Currently amended) An exhaust gas flow circuit for reducing pressure in an exhaust system of an internal combustion engine, comprising:

- a pumping unit arranged in series with said exhaust system including an inlet in fluid communication with an outlet of a forward portion of the exhaust system, and an outlet in fluid communication with an inlet of a rearward portion of the exhaust system, said pumping unit selectively pumping exhaust gas from the forward portion to the rearward portion of the exhaust system; and
- a power source driving said pumping unit.

2. (original) The flow circuit of claim 1, further comprising:

- a bypass passage arranged in parallel flow relation with said pumping unit between said pumping unit inlet and outlet; and
- a bypass valve for opening said bypass passage and providing a flow path for exhaust gas from the forward portion to the rearward portion of the exhaust system in parallel with said pumping unit, and for closing said bypass passage to prevent exhaust gas flow therethrough.

3. (original) The flow circuit of claim 2, wherein said bypass valve opens said bypass passage when a mass flow rate of exhaust gas in the exhaust system is relatively high and closes said bypass passage when the mass flow rate of exhaust gas is relatively low.

4. (original) The flow circuit of claim 2, wherein said bypass valve is located in said bypass passage.

Appl. No. 10/755,458
Response to Office Action dated March 6, 2006
000073874/0029/721669-1

5. (original) The flow circuit of claim 1, wherein said pumping unit is one of a gas compressor and a gas pump.

6. (original) The flow circuit of claim 1, wherein the exhaust system further includes an exhaust manifold for carrying exhaust gas from the engine to the forward portion of the exhaust system, a catalytic converter located in the forward portion upstream from said pumping unit inlet, and a discharge pipe located in the rearward portion of the exhaust system and communicating with said pumping unit outlet for carrying exhaust gas to an outlet of the exhaust system.

7. (original) The flow circuit of claim 1, wherein the engine includes an intake system that is naturally aspirated.

8. (original) The flow circuit of claim 1, wherein said power source is an electric motor.

9. (Currently amended) A decharge unit containing a flow circuit for reducing pressure in the exhaust system of an internal combustion engine, comprising:

a housing;

a pumping unit located in said housing, said pumping unit arranged in series with said exhaust system and including an inlet in fluid communication with a forward portion of the exhaust system, and an outlet in fluid communication with a rearward portion of the exhaust system, said pumping unit pumping exhaust gas from the forward portion to the rearward portion; and

a power source located in said housing and driveably connected to said pumping unit.

10. (original) The decharge unit of claim 9, further comprising:

Appl. No. 10/755,458
Response to Office Action dated March 6, 2008
000073874/0029/721669-1

- a bypass passage arranged in parallel flow relation with said pumping unit between said inlet and outlet; and
- a bypass valve for opening said bypass passage and providing a flow path for exhaust gas between said inlet and outlet in parallel with said pumping unit, and for closing said bypass passage.

11.(original) The decharge unit of claim 10, wherein said bypass valve opens said bypass passage when a mass flow rate of exhaust gas in the exhaust system is relatively high and closes said bypass passage when the mass flow rate of exhaust gas is relatively low.

12.(original) The decharge unit of claim 9, wherein said pumping unit is one of a gas compressor and a gas pump.

13.(original) The decharge unit of claim 9, wherein the exhaust system further comprises:

- an exhaust manifold for carrying exhaust gas from the engine to the forward portion of the exhaust system;
- a catalytic converter located in the forward portion of the exhaust system upstream from said pumping unit inlet; and
- a discharge pipe located in the rearward portion of the exhaust system for communicating with said pumping unit outlet to carry exhaust gas from said pumping unit outlet.

14.(original) The decharge unit of claim 9, wherein the engine includes an intake system that is naturally aspirated.

15.(original) The decharge unit of claim 9, wherein said power source is an electric motor.

Appl. No. 10/755,458
Response to Office Action dated March 6, 2006
000073874/0029/721669-1

16. (Currently amended) An exhaust gas system for an internal combustion engine, comprising:

- an exhaust manifold for carrying exhaust gas from the engine;
- a catalytic converter communicating with said exhaust manifold;
- a housing located downstream from said catalytic converter;
- a pumping unit located in said housing, said pumping unit arranged in series with said exhaust system and including an inlet in fluid communication with said catalytic converter and an outlet, said pumping unit pumping exhaust gas from said catalytic converter to said outlet; and
- a power source located in the housing and driveably connected to said pumping unit.

17. (original) The exhaust gas system of claim 16, further comprising:
a bypass passage arranged in parallel flow relation with said pumping unit between said inlet and outlet; and
a bypass valve for opening said bypass passage and providing a flow path for exhaust gas between said inlet and outlet in parallel with said pumping unit, and for closing said bypass passage.

18. (New) The flow circuit of claim 2 wherein said pumping unit and said bypass passage provide an exhaust gas flow circuit simultaneously.
19. (New) The discharge unit of claim 9 wherein said pumping unit and said bypass passage provide an exhaust gas flow circuit simultaneously.
20. (New) The exhaust gas system of claim 17 wherein said pumping unit and said bypass passage provide an exhaust gas flow circuit simultaneously.